and his own remarks; and at the same time, or somewhat later, Vincent de Beauvais in France, Thomas de Cantimpré in Belgium, Ristoro d'Arezzo in Italy, Bartholomew Anglicus (or de Glanvilla) in England, incorporated the Aristotelian ideas in their encyclopædic works all bearing the general title "On the Nature of Things" ("De Natura Rerum").

But the firm and absolute adherence to the doctrines of the master, Aristotle, the denying of all that could not be found in his writings, rendered the scholastic meteorology so noxious to any real progress that it came into conflict with all new ideas. Notwithstanding, these forced their way by and by, and the beginnings of the modern experimental science are to be found just at that epoch when scholasticism had reached its highest point, namely, in the thirteenth century.

It is not yet definitely settled where the new experimental science took its origin—most likely contemporaneously in France and in England, where the two friends Pierre de Maricourt (Petrus Peregrinus) and Roger Bacon can be considered as the first great representatives of the new aims.

The former, a French nobleman and military engineer, is the author of the famous treatise on the magnet, and made many optical experiments like his English friend; and although both have not dealt with meteorology properly speaking—except the rainbow—yet their general influence must have been great on our science also. Roger Bacon's energetic opposing of the experiment to the argument—"argumentum non sufficit, sed experientia," he says in his "Opus Majus"—conduced naturally to the observing of atmospheric phenomena instead of only interpreting the writings of the ancients.

Thus the new aims advanced meteorological observations also, for which the ground was well prepared. As I have just shown, such observations were made in antiquity and never had wholly ceased, despite frequent and long interruptions. For the custom of the Roman historians to note in their annals the more important atmospheric phenomena, especially those necessitating sacrifices, was handed down to the chroniclers of the Middle Ages, whose chronicles became richer and richer in entries of the weather, until at the end of the thirteenth century these records are so replete with remarks on the weather that the character of the seasons could be traced back.

Now the time is ripe for more systematic observations, and we find at Oxford William Merle, a fellow of Merton College, to whom remains the distinction of being the first man in the Occidental world to keep a regular journal of the weather day by day. It embraces the years 1337 until 1344. The journal is preserved at the Bodleian Library. It is the earliest known journal of the weather, kept at Oxford and later at Driby in Lincolnshire, where William Merle was rector.

A close examination of the circumstances forces me to the conclusion that William Merle was induced to make regular observations by the desire to ascertain the correctness of the prognostics made by himself and his colleagues at Oxford, where meteorology, or, more properly speaking, astro-meteorology, had been flourishing since the time of Robert Grosseteste, the famous Bishop of Lincoln. Merle himself has left behind two MSS. on the forecasting of the weather, and his contemporaneous fellow of Merton College, John Eschendon (or Ashendon), whose name has been corrupted into Eschuid, completed in 1348 a voluminous treatise of astro-meteorology bearing the title "Summa judicialis de accidentibus mundi." It was printed at Venice in 1489, and served in the sixteenth century as a text-book at the University of Vienna. The work is usually quoted in meteorological literature under the abbreviated title "Summa Anglicana," and is now extremely rare.

When, eighteen years ago, the journal of William Merle was re-discovered, it seemed to stand all alone, since we had no knowledge of other observations made in England or abroad but recently I have been able to find out a nearly continued sequence of series of such observations, and to prove that from the fourteenth to the middle of the seventeenth centuries, namely, until the invention of meteorological instruments the weather was regularly observed in many places in Central and Western Europe.

I had noticed that some copies of the large astronomical work, published in 1499 by Justus Stoeffler and Jacob Pflaum at Tübingen, "Almanach nova plurimis annis venturis inservientia," containing ephemerides for the years 1499 to 1531, were full of meteorological entries written on the broad margins. This induced me to make systematic inquiry into copies of the work named containing such entries preserved in the great libraries of Germany, Austria, and Switzerland. The result of this inquiry was rather astonishing. No fewer than 123 different series of meteorological observations belonging to the fifteenth, sixteenth, and seventeenth centuries were found. Considering that this number of necessity represents but a small proportion, and concerns only some parts of Central Europe, we may safely presume that in the whole of Europe their number must have been far greater. Some of these early series of weather observations are even corresponding ones, made by agreement.

A fresh stimulus for observing came at the end of the fifteenth century from quite another direction. The great discoveries of new lands and seas considerably enlarged and widened old ideas and conceptions. Atmospheric phenomena never seen before came to the knowledge of man, and climates very different from those at home became known. Intelligent men were struck by such varieties, and we can clearly observe their effect on them in the writings of that epoch. Luis de Camões, the famous Portuguese poet, described in his epos, "Os Lusiadas," for the first time minutely the water-spouts often observed by him off the coast of Guinea and the storms in the South Indian Ocean, while from the logbook kept by Christopher Columbus during his first voyage we learn the deep impression he got from the difference of climate and weather in the Atlantic beyond the Azores compared with that eastwards of the islands. Such new observations advanced mostly the doctrine of the winds, which was now more fully expounded in Spanish and Portuguese works, until in the year 1622 Francis Bacon was the first to publish a special treatise dealing entirely with the winds.

But meanwhile experimental science, the growing up of which I have just alluded to, was so much developed that in the first half of the seventeenth century the principal meteorological instruments were invented. To Italy belongs the glory of being the native country of instrumental meteorology, the cradle of which stood at Florence. These inventions proved the first step in making meteorology a science, and now the shadows of the dawn are fast disappearing before the full light of the rising sun.

UNIVERSITY AND EDUCATIONAL INTELLIGENCE.

CAMBRIDGE.—Certain friends of the Chancellor desire the establishment of some award to be associated with Lord Rayleigh's name, in order to commemorate the unanimous election of a scientific investigator to the office of Chancellor of the University. With this object they have deposited a sum of money at the bank, the interest of which may be used for the purpose of awarding from time to time a prize to be called the Rayleigh prize. It is proposed to adjudicate these prizes at the same time and by the same adjudicators as the Smith's prize.

The Walsingham medal for 1908 has been awarded to C. C. Dobell for his essay entitled (1) "Protista Parasitic in Frogs and Toads," (2) "Chromidia and the Binuclearity Hypotheses"; and a second Walsingham medal to G. R. Mines and D. Thoday. Mr. Mines's essay was entitled "The Spontaneous Movements of Amphibian Muscles in Saline Solutions," and Mr. Thoday's essay was entitled "Increase of Dry Weight as a Measure of Assimilation." Lord Walsingham has expressed his willingness to give, this year, a bronze replica of the medal to each of the candidates awarded the second medal. The medal is awarded for a monograph or essay giving evidence of original research on any botanical, geological, or zoological subject, zoology being understood to include animal morphology and physiology. Essays for the ensuing year are to be sent to the chairman of the special board for biology and geology (Prof. Langley, The Museums) not later than October 10, 1909.

Mr. W. E. Dixon has been appointed university lecturer in pharmacology.

The office of superintendent of the museum of zoology will be vacant on January 15, 1909, by the resignation of Dr. Harmer. The stipend at present attached to the office is 200*l.* per annum. Applications should be sent to the chairman of the special board for biology and geology (Prof. Langley, The Museums) on or before January 21, 1909.

LONDON.—Prof. A. Sedgwick, F.R.S., professor of zoology and comparative anatomy in the University of Cambridge, has accepted the professorship of zoology at the Imperial College of Science and Technology, South Kensington.

At a meeting on December 2 the Senate decided unanimously in favour of the appointment of a Royal Commission to consider the relations between the University and the Imperial College. It will be remembered that Mr. McKenna undertook to recommend the appointment of a Royal Commission if he received representations on the subject from the Senate of the University.

MR. LEWIS F. DAY will give an address at the Sir John Cass Technical Institute at the distribution of prizes and certificates on Wednesday, December 16. There will be an exhibition of students' work and apparatus in the laboratories, workshops, and other rooms.

MR. S. A. SAUNDER, secretary to the Royal Astronomical Society and a past-president of the British Astronomical Association, has been appointed to the Gresham lectureship on astronomy at Gresham College, London, rendered vacant by the resignation of the Rev. E. Ledger.

IT is officially announced that letters patent have passed the Great Seal of Ireland constituting and founding a university, having its seat in Dublin, under the name of the National University of Ireland, and a university, having its seat in Belfast, under the name of the Queen's University of Belfast.

SPEAKING at Abergavenny on December 4, Sir Edward Strachey, M.P., commented upon the recently issued report of the Departmental Committee which inquired into the provision of education in England and Wales for affording scientific and technical instruction in agriculture. Sir Edward Strachey asked, Why should there not be in this country a great State agricultural farm equipped with everything necessary for experiments and research and for the education of teachers in agriculture? There might well be in every county or group of counties an agricultural county farm subsidised by the State and, to a certain extent, from the rates. These farm institutions should be, he said, for assisting farmers and demonstrating the value of science applied to agriculture. There should be, too, a centre for experiments wherever local experiment is necessary and for demonstration where desirable; but the best form of demonstration, he pointed out, is on various farms under different conditions of soils and climates. Sir Edward Strachey added that his suggestions were those of one who is a farmer, but that it is the duty of the President of the Board of Agriculture to formulate a scheme of national agricultural education somewhat on the Irish lines.

THE report of the departmental committee on agricultural education is under consideration in detail by a committee of the Farmers' Club. A memorandum dealing with its several provisions is being prepared, and the committee has expressed agreement with the views stated in the report in the following resolutions:—(1) That the funds at present available for agricultural education are wholly inadequate, and considerably increased funds should be provided, the main source of which must be the national Exchequer. Such funds should be employed by the Board of Agriculture, first, to aid existing and projected institutions in respect of their staff and general equipment, and, secondly, to aid local authorities in making provision for the agricultural work conducted by them. (2) That since complete cooperation between the Board of Agriculture and Education is essential, if the field of education is to be adequately covered and overlapping avoided the committee is of opinion that agricultural instruction, when provided by universities, university colleges, agricultural colleges, farm institutes, and winter schools, or by means of special classes or courses of lectures in agriculture and kindred subjects (*e.g.* dairying, horticulture), should be under the direction of the Board of Agriculture, while all instruction in agricultural subjects forming part of courses in primary, secondary, or such evening schools as are in definite continuation of the education given in primary schools, should be under the Board of Education.

SOCIETIES AND ACADEMIES.

LONDON.

Royal Society, November 5.—"On the Generation of a Luminous Glow in an Exhausted Receiver moving near an Electrostatic Field, and the Action of a Magnetic Field on the Glow so produced, the Residual Gases being Oxygen, Hydrogen, Neon, and Air." Part iii. By F. J. **Jervis-Smith**, F.R.S.

A silica bulb, as used in the experiments described in Proc. Roy. Soc., A, vol. lxxxi., p. 214, was rotated in a magnetic and also in an electrostatic field, the residual gas being oxygen. The inductor was charged until the bulb glowed; then it was slowly discharged through damped thread, until the glow disappeared; on establishing the magnetic field the brilliant glow was restored. The magnetic effect was less marked when air was the residual gas. When glass was employed instead of silica the glow was greatly reduced. The glow effects in widely differing gases were compared. Sir William Ramsay kindly prepared for the author of the paper a bulb in which the residual gas was neon. The neon glow-bulb when treated exactly in the same way as the oxygen glow-bulb gave but little glow, of a reddish tint. The glow was but feebly affected by the magnetic field. A silica glow-bulb, residual gas air, was rotated, as in the previous experiments; the inductor was charged to 800 volts, and placed at such a distance from the bulb that it did not show any glow. On establishing a *magnetic field*, in which the bulb rotated, it *glowed brightly*.

When hydrogen was the residual gas, in a glass bulb the position of maximum glow was shifted through 90° from the position of maximum glow when oxygen was the residual gas.

The effect of a magnetic field on the generation of electricity was examined. A silica glow-bulb in contact with a camel-hair brush was rotated between the poles of an electromagnet. The pressure of the brush was so adjusted that no glow was visible; when the magnetic field was established the bulb glowed brightly, and ceased the instant the magnetic field was shut off. The experiment could be easily repeated with certainty.

In another experiment the brush, after being in contact with the bulb, was removed. The bulb glowed the instant the magnetic field was restored. The experiments illustrate the profound change which takes place in the behaviour of a moving static induction of electricity when the bulb in which it occurs is in a magnetic field, and show how the action of the magnetic field on the electric motion in the residual gas is modified by the nature of the gas employed.

Royal Microscopical Society, November 18.—Mr. Conrad Beck, vice-president, in the chair.—A new growing cell for critical observations under the highest powers: A. A. C. E. **Merlin.**—Studeria, a remarkable new genus of Alcyonarians: Prof. J. A. **Thomson.**—The present status of micrometry: Dr. M. D. **Ewell.**

Entomological Society, November 18.—Mr. H. Rowland-Brown, vice-president, in the chair.—Descriptions of microlepidoptera from Bolivia and Peru: E. **Meyrick.**

CAMBRIDGE.

Philosophical Society, November 23.—Prof. Sedgwick president, in the chair.—The relationship between human and bovine tuberculosis: Prof. **Woodhead.** The author gave an account of some observations on 127 cases of tuberculosis in children. He found that the disease seldom occurred in children who died under one year of age, only